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Kewitsch

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(54) **SCALABLE AND MODULAR AUTOMATED FIBER OPTIC CROSS-CONNECT SYSTEMS**

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CPC ***G02B 6/356*** (2013.01); ***G02B 6/3502*** (2013.01); ***G02B 6/3556*** (2013.01); ***G02B 6/3564*** (2013.01); ***G02B 6/3897*** (2013.01); ***G02B 6/4452*** (2013.01); ***H04Q 1/145*** (2013.01); ***H04Q 11/0005*** (2013.01); *H04Q 2011/0058* (2013.01)

(58) **Field of Classification Search**

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See application file for complete search history.

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(57) **ABSTRACT**

This invention discloses patch-panel systems for organized configuration management of large numbers of fiber optic interconnection strands, wherein each strand transmits high bandwidth signals between devices. In particular, a system for the programmable interconnection of large numbers of optical fiber strands is provided, whereby strands connecting a two-dimensional array of connectors are mapped in an ordered and rule based fashion into a one-dimensional array with substantially straight lines strands there between. The braid of fiber optic strands is partitioned into multiple independent, non-interfering zones or subbraids. The separation into subbraids provides spatial clearance for one or more robotic grippers to enter the free volume substantially adjacent to the two-dimensional array of connectors and to mechanically reconfigure one or more optical fiber strands without interrupting or entangling other fiber optic strands.

10 Claims, 37 Drawing Sheets